U.S. Fish and Wildlife Service

Kofa National Wildlife Refuge

Categorical Exclusion

Yaqui and McPherson Tanks Redevelopment Projects

U.S. Fish and Wildlife Service
Region 2
Kofa National Wildlife Refuge
Kofa and Castle Dome Mountains
Yuma County
Arizona

May 2007

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Proposed Action

Reconstruction of Yaqui and McPherson Tanks – May - June 2007

Project Locations: The proposed reconstruction of Yaqui Tank is located on Kofa National Wildlife Refuge (NWR)(Figure 1) in the eastern portion of the Kofa Mountains (Lat/Long coordinates: 33° 18.649'N, 113° 55.556'W [NAD 83/WGS84], 2383 feet in elevation; T. 1S., R. 16W., Sec. 29, G&SRM, Arizona, Figure 2). The proposed reconstruction of McPherson Tank is located on Kofa NWR in the Castle Dome Mountains between the existing McPherson Tank and McPherson Pass (Lat/Long coordinates: 33° 07.780'N, 114° 09.688'W [NAD 83/WGS84] 1911 feet in elevation; T. 3S., R. 18W., Sec. 30, G&SRM, Arizona, Figure 3). The Kofa NWR is managed by the U.S. Fish and Wildlife Service (Service).

PROJECT DESCRIPTION

Project Summary: The proposed project consists of the installation of a series of 24" diameter polyvinyl chorine (PVC) pipes and a trough in the vicinity of the existing Yaqui and McPherson Tanks. The completion of work at each project site is expected to take between 3 and 5 days and is scheduled to take place in May and June 2007. The purpose of the project is to redesign new water sources that capture and store rainwater more efficiently, greatly reducing the need to haul supplemental water to the existing tanks except during periods of multi-year extreme droughts. The desired goal of the project is to ensure an adequate and well-distributed water supply for desert bighorn sheep (*Ovis canadensis mexicana*) during the summer months and during periods of extreme drought, and minimize the impacts associated with hauling water in wilderness. The redevelopment of existing desert bighorn sheep water sources would increase water availability and improve water distribution in the Kofa and Castle Dome Mountains. The redevelopments would increase the efficiency of both capture and storage of runoff and reducing the need to haul water. The redevelopment of Yaqui and McPherson Tanks would assist the Service and the Arizona Game and Fish Department in their efforts to reverse the population decline of desert bighorn sheep on the Kofa NWR and surrounding areas. The population estimate of desert bighorn sheep from the October 2006 survey was 390 animals, down from 813 estimated in October 2000.

Upon completion of each redevelopment project, open trenches would be filled and returned to the pre-construction grade. Based on the size of the watershed, the placement of the collection points, and the storage capacity of each project (approximately 13,000 gallons each), it is anticipated that natural run-off will be a sufficient source of water for the guzzler during most years. During periods of extended drought, supplemental water may need to be hauled to the tanks to prevent them from going dry. The existing water catchments, Yaqui and McPherson Tanks, which are modified natural tinajas, would remain since these sites are known breeding habitat for amphibians. The existing modifications at the original developments, such as the shade cover at Yaqui Tank, would remain initially, and would not be modified. In the future, these modifications could be removed instead of repaired, once repairs are necessary.

The new underground storage tanks for the reconstructed artificial water source would consist of three or four parallel lengths of 24" diameter PVC pipes, each consisting of six or eight 20' long segments (see attached McPherson Tank and Yaqui Tank Redevelopment Schematics). The 24"

diameter PVC pipes will have PVC or other plastic pipes that connect one to another and also to a ground-level 24" deep, sloping trough. Feeder lines approximately 6" in diameter and 100 to 150' in length would be attached to the top of the 24" PVC pipes and run out to two or three small rills on the slope where very small weir(s) would be built out of concrete building blocks and mortar to capture rainwater when there is surface flow. The weirs would be covered with the local sand and rocks so they would blend in with the native substrate. Concrete building blocks have been found to more effective than native rock in creating a weir with an even top which allows a small amount of water to be deflected into the PVC pipes without being prone to erosion damage. The 24" PVC and the 6" PVC would be buried at a level where it does not extend above the surrounding ground surface to minimize visual disturbance. All materials and equipment would be brought in by vehicles using designated vehicle routes as much as possible. At McPherson Tank, vehicles would travel the last 0.10 miles to the project site in McPherson Wash. No new road construction is expected as a result of the proposed projects.

At each location, a few teddy bear cholla (*Opuntia bigelovii*) and potentially, buckhorn cholla (*O. acanthocarpa*) would have to be removed to accommodate the buried PVC pipe. These cacti, which are abundant at Kofa NWR, would be replanted in the project area after the surface has been restored to original contour. Some foothill and blue paloverde trees (*Cercidium microphyllum* and *C. floridum*) would have to be trimmed to allow vehicles carrying equipment and materials to drive up McPherson Wash to the project site for the proposed McPherson Tank Redevelopment. No trees would have to be removed, with the potential exception of one small foothill paloverde tree (approximately 4' tall) at the McPherson Tank Redevelopment Project site. Some small white bursage (*Ambroisa dumosa*) , creosote (*Larrea tridentata*), and little-leaf krameria (*Krameria parvifolia*) shrubs at both the Yaqui and McPherson Tank Redevelopments may be removed at the 24" PVC pipe burial site, or along the collection lines. An ocotillo (*Fouqueria splendens*) may be narrowly missed or may have to be uprooted and later replanted at the McPherson Tank Redevelopment Project site. Plant removal would be avoided whenever possible. When finished, the area would be raked and broomed, returning the area to pre-construction grade, and removing any tracks left by vehicles or equipment.

Because the projects would be completed in June, it may be many weeks before rainfall could be expected to fill the two new storage systems. Water may be hauled to each project site so that they immediately become a source of water for wildlife.

SUMMARY OF ENVIRONMENTAL IMPACTS

Soils and Vegetation: Temporary soil disturbance would occur during the redevelopment of Yaqui and McPherson Tanks. Overall impacts will be minor, and would occur on less than 0.08 acres at each site. Disturbance and removal of plants would be avoided whenever practicable, however, several trees would require trimming in McPherson Wash and one foothill paloverde tree and one ocotillo may have to be removed at the McPherson Tank Redevelopment site. In addition, a few creosote, little-leaf krameria, and white bursage shrubs would be removed at each redevelopment site. Replanting of these species is very difficult and would not be attempted unless the plants are quite small (less than three inches tall).

Wildlife: The water at the Redeveloped Yaqui and McPherson Tanks would likely attract wildlife moving through and resident in the area, including mule deer (*Odocoileus hemionus*),

desert bighorn sheep, rodents, rabbits, insects, and birds. Wildlife species may also be temporarily displaced during the construction of the water source because of human disturbance and noise. Overall negative impacts would be minor.

The Yaqui and McPherson Tanks Redevelopment projects are expected to have a positive impact on the desert bighorn sheep population in the area by providing reliable year-around sources of water. Without improving the distribution and reliability of available water, it is likely that desert bighorn sheep will continue to decline as the current long drought cycle continues in the southwest. Data from previous sheep surveys and observations have shown that sheep use these areas throughout the year.

Threatened and Endangered Species: The development of these water sources would have no effect on any threatened or endangered species. Periodically, migrating American peregrine falcons (*Falco peregrinus*) have been seen at Kofa NWR, but these observations have been restricted to the winter months. Peregrine falcons, however, were taken off the list of endangered species in August 1999. California brown pelicans (*Pelecanus occidentalis*), which remain on the endangered species list, are rarely seen flying over the refuge. Observations of these birds are usually restricted to July through September.

Land Use and Ownership: No changes to land use or ownership would result from the proposed action.

Cultural Resources: A survey of cultural resources has been completed (April 16, 2007 – Yaqui Tank Redevelopment and May 9, 2007 – McPherson Tank Redevelopment) on each of the proposed project areas; no cultural resources were found at either site, so no impacts are expected. (See attached Cultural Resources Review).

Water (Surface and Ground): Only minor impacts to surface water drainage runoff are expected to result from the proposed action. Furthermore, no impacts are expected to occur to ground water resources. Refueling of equipment will take place with care to prevent spills. Any soil contaminated by fuel or oils will be bagged and removed from the project sites for disposal in an approved landfill (the South Yuma County Landfill).

Wilderness: Approximately 82% of the Kofa NWR is within the Kofa Refuge Wilderness. The Yaqui Tank Redevelopment Project is planned to take place immediately adjacent to the designated road that follows Moonshine Wash and as a result, is nearly all within the 200-foot-wide area that is outside of designated Wilderness. The only portion of the proposed Yaqui Tank Project that is within Wilderness would be two or three of the water diversion weirs. The McPherson Tank Redevelopment Project would be within designated Wilderness, adjacent to McPherson Wash within 0.1 mile of the designated McPherson Pass Road.

The construction of the Yaqui and McPherson Tanks Redevelopment Projects would temporarily impact wilderness values and character with the presence of heavy equipment, vehicles, people, and materials. These impacts are expected to be restricted to a period of three to five days. Only the small vent pipes for each of the 24” PVC pipes and the drinking troughs would ultimately be visible above ground. With careful examination of the area, a visitor would eventually locate the small water diversion weirs, but these would be substantially unnoticeable, naturalized with sand and gravel, and would only be a few inches high.

Overall, the impact of maintenance activities in the Kofa Wilderness would decrease since very little water hauling after construction is expected to take place. In addition, the Service would discontinue maintenance of the existing Yaqui and McPherson Tank projects. (See also the *Minimum Requirements Analysis for the Yaqui and McPherson Tanks Redevelopment Projects*).

Invasive Species: The proposed projects would result in soil disturbance which may promote invasive species establishment in the immediate project areas; however the impacts would be minor in both the long and short term. Disturbed areas within the project areas would be monitored and invasive species would be controlled or eradicated if observed.

Cumulative Impacts: The Service has determined that the proposed project does not result in any irreversible or irretrievable commitments of refuge resources, nor would it result in any cumulative impacts to these resources. This decision is based on the degree and nature of the impacts, the immediate benefits the proposed action would provide to wildlife resources, as well as the enhancement of wilderness character and values in the long-term through the reduction of the need for maintenance and water-hauling to existing water sources.

CONCLUSION

It is the Fish and Wildlife Service's determination that this project qualifies as an action categorically exempted from additional environmental analysis per the National Environmental Policy Act; as listed in 516 DM 6 Appendix 1 Fish and Wildlife Service, Section 1.4 Categorical Exclusions, B. Resource Management, (3) *"The construction of new, or the addition of, small structures or improvements, including structures and improvements for the restoration of wetland, riparian, in stream, or native habitats, which result in no or only minor changes in the use of the affected local area..."* [Federal Register, Vol. 62, No. 11, January 16, 1997, page 2381].

Kofa National Wildlife Refuge
Minimum Requirements Analysis

Leading Questions:

1) Is this an emergency? (i.e. a situation that involves an inescapable urgency and temporary need for speed beyond that available by primitive means, such as fire suppression, health and safety of *people*, law enforcement efforts involving serious crime or fugitive pursuit, retrieval of the deceased or an immediate aircraft accident investigation). Circle *Yes* or *No*.	**NO** GO TO QUESTION 3	**YES** PROCEED WITH ACTION
2) Are there other less intrusive actions that can be taken or that should be tried first inside or outside wilderness that will resolve this issue? (i.e. signing, visitor education, information, regulations, use limits, law enforcement, are or trail closures, etc). Circle *Yes* or *No*.	**NO** GO TO QUESTION 3	**YES** IMPLEMENT OTHER ACTIONS USING THE APPROPRIATE PROCESS

3) Can this activity be accomplished outside of wilderness? Circle *Yes* or *No*.	**NO** GO TO QUESTION 4	**YES** PERFORM ACTIVITY OUTSIDE WILDERNESS
4) Is this activity subject to a valid existing rights? (i.e. mining claim or right-of-way easement). Circle *Yes* or *No*.	**NO** GO TO QUESTION 5	**YES** PROCEED TO MINIMUM TOOL
5) Is there an exception in legislation that requires this activity? Circle *Yes* or *No*.	**NO** GO TO QUESTION 6	**YES** PROCEED TO MINIMUM TOOL
6) Have you considered the regional landscape and how this action helps protect natural conditions within this context? (e.g. insect and disease control, wildlife transplants, displacement of visitors and impacts, etc.). Circle *Yes* or *No*.	**NO** CONSIDER REGIONAL LANDSCAPE IMPLICATIONS. GO TO QUESTION 7	**YES** PROCEED TO MINIMUM TOOL
7) Is there a special provision in legislation (the 1964 & 1990 Wilderness Acts) that allows this activity? (i.e. low-level overflights by military aircraft/maintenance of existing associated ground instrumentation in accordance with certain interagency agreements; law enforcement border operations by INS, DEA, Customs in accordance with certain interagency agreements). Circle *Yes* or *No*.* *Consider an Action Needed Alternative when the effects of the activity on wilderness appear to have greater consequences than a No Action Alternative.	**NO** ACTIVITY MAY STILL BE CONSIDERED; COMPLETE RESPONSIVE QUESTIONS ON NEXT PAGE.	**YES** 1) TAKE A **NO ACTION** ALTERNATIVE- STOP HERE 2) TAKE AN **ACTION NEEDED** ALTERNATIVE- COMPLETE RESPONSIVE QUESTIONS ON NEXT PAGE

Kofa National Wildlife Refuge
Minimum Requirements Analysis

Response Questions:

Consistency with Wilderness Plan:

8) Does the action fail to meet the stated Wilderness goals and objectives of applicable legislation, policy and the Comprehensive Conservation Plan? Circle *Yes* or *No*. *Attach a written response*.

NO YES EXPLAIN:
The management actions within the *Kofa National Wildlife Refuge & Wilderness and New Water Mountains Wilderness Interagency Management Plan and Environmental Assessment* include maintaining water for wildlife in Wilderness (Page 33). These actions are consistent with this plan.

9) Is the action inconsistent with the desired future conditions of the area? Circle *Yes* or *No*. *Attach a written respons*e.

NO YES EXPLAIN:
Maintaining well-distributed, reliable water sources for wildlife is consistent with the desired future conditions of the area.

Effect on Wilderness Character:

10) Does the proposed action maximize one resource at the expense of the wilderness as a whole? Circle *Yes* or *No*.

NO YES EXPLAIN:
The proposed action is intended to restore and maintain wildlife and wildlife habitat and the overall condition of the refuge. We do not believe this action denigrates wilderness as a whole. Wildlife is a wilderness resource.

11) Does the proposal have effects from human activities that will dominate natural conditions and processes? Circle *Yes* or *No*.

NO YES EXPLAIN:
The effect of this action will not dominate natural conditions. Both proposed redevelopment projects are essentially underground with only the ground-level trough visible to the casual observer.

12) Do these actions impact opportunities for solitude or a primitive and unconfined type of recreation? Circle *Yes* or *No*.

NO YES EXPLAIN:
Visitor solitude may be temporarily impacted in the immediate vicinity of the proposed projects if mechanical means are used to accomplish these actions.

13) Will the proposal permanently occupy or modify the area? Circle *Yes* or *No*.

NO YES EXPLAIN:
None of the proposed actions require permanent occupancy of lands in Wilderness.

14) Does the action contribute to long-term ***negative*** effects on wilderness values? Circle *Yes* or *No*.

NO YES EXPLAIN:
No new negative effects will result from this action. Maintaining and enhancing wildlife populations contributes to long-term positive effects on wilderness values.

Management Situation:

15) Did you consider convenience, comfort, economic or commercial values before wilderness values? Circle *Yes* or *No*.

NO YES EXPLAIN:
Reality dictates that to complete this action, some short-term wilderness values will be compromised. However, economic convenience or comfort or commercial values were not the determining factor in the decision to proceed with the action. Safety to personnel and minimizing disturbance to wildlife were considered.

Minimum Requirements Conclusion:

Evaluate the responses for their potential adverse effect on wilderness. An increasing number of Yes responses indicates potential adverse affects to wilderness character. Do you still need to proceed?

Total: (One "Yes" Responses)

NO----------STOP HERE

YES----------PROCEED TO MINIMUM TOOL ANALYSIS

Kofa National Wildlife Refuge
Minimum Tool Analysis

Project Information:

Project Proposal: Yaqui Tank and McPherson Tank Redevelopment Projects

Proponents of Project: Kofa National Wildlife Refuge

Scheduled Date: Summer 2007

Location: Kofa National Wildlife Refuge at two locations: (1) Near Yaqui Tank, along Moonshine Wash Road (33° 18.649'N, 113° 55.556'W [NAD 83/WGS84]), 2383' in elevation, located primarily outside of Wilderness and (2) Near McPherson Tank, along the McPherson Pass Road (33° 07.780'N, 114° 09.688'W), 1911' in elevation, located inside Kofa NWR Wilderness.

Background and Method and Techniques to Be Employed:

The population of desert bighorn sheep (*Ovis canadensis mexicana*) on the Kofa National Wildilfe Refuge (NWR) has declined to an estimated 390 animals (October 2006 survey). In October 2000, the population was estimated to be 813 sheep. The U.S. Fish and Wildlife Service (Service) is working cooperatively with the Arizona Game and Fish Department (AGFD) to address this population decline. The Kofa NWR bighorn sheep population is important regionally as a source population for transplants. Sheep from the Kofa NWR have been transplanted to Nevada, Colorado, New Mexico, and Texas, as well as a number of locations within Arizona to re-establish or augment herds. Transplants from Kofa NWR are currently suspended until the sheep population increases.

The AGFD and the Service have prepared a document entitled *Investigative Report and Recommendations for the Kofa Bighorn Sheep Herd*. This document lists efforts to increase the number of desert bighorn sheep including, but not limited to, evaluating and potentially establishing seasonal public closures of bighorn lambing areas, evaluating and then removing individual mountain lions that are known to be killing bighorn sheep, capturing and radio-collaring approximately 30 sheep to evaluate their health and follow their eventual mortality, providing reliable water for desert bighorn sheep and for other species of wildlife at additional locations (beyond those water sources traditionally maintained), and redeveloping existing water sources so that they are more reliable and require less maintenance.

Redeveloping Yaqui and McPherson Tanks would provide reliable, year-around water for desert bighorn sheep at two locations (in the Kofa and Castle Dome Mountains) where the existing Yaqui and McPherson Tanks have not always been reliable and have been very difficult, logistically, to maintain. Creating a new wildlife water source that has a modern design requiring little water augmentation and that is in the vicinity of an existing, non-functional or unreliable water source is considered a redevelopment.

Yaqui and McPherson Tanks are relatively distant from other existing, permanent water source. Figure 1 shows the location of permanent wildlife water sources on Kofa NWR and circles of three-mile radius around those permanent water sources. Figure 3 demonstrates that permanent water sources for desert bighorn sheep are relatively clustered, leaving large areas of desert bighorn sheep habitat without permanent water. The two proposed redevelopments would fill gaps in the eastern portion of the Kofa Mountains and in the McPherson Pass area of the Castle Dome Mountains.

Planning Background. *The Kofa National Wildlife Refuge and Wilderness and New Water Mountains Wilderness Interagency Management Plan and Environmental Assessment* (1997)

specifically covers the use of mechanized equipment to augment and maintain important sources of water for wildlife (page 33), but does not mention any other water sources in Kofa NWR Wilderness other than Adam's Well, Kofa Mountain #1 (also known as Scotty Dog Catchment or Catchment #736), Kofa Mountain #2 (formerly Catchment #737, now #1115), King Well, and Charlie Died Tank. The *Interagency Management Plan* does state that "…the access method for emergency situations at wildlife waters will be determined by the Field Manager and/or Refuge Manager on a case-by-case basis, and where applicable, in consultation with AGFD.." The proposed projects at Yaqui and McPherson Tanks are in keeping with the intent of the *Interagency Management Plan.* The *Interagency Management Plan* is scheduled for revision in 2011; all refuge activities will be re-evaluated at that time.

MRA Longevity: This Minimum Requirements Analysis covers similar wildlife redevelopment projects in the future, located close to designated roads, requiring no new road construction, especially when located in areas where they are only partially in designated Wilderness (as is the proposed project at Yaqui Tank where only the three water diversion structures are in Wilderness).

Why Project Is Necessary:

Kofa NWR was established, in part, for the conservation of desert bighorn sheep and other wildlife, and the maintenance of this population of desert bighorn sheep is very important regionally for the conservation of sheep and as a source for transplants to other locations in order to establish and re-establish other sheep herds. Wildlife is an important component of Wilderness.

Alternatives:

1) **Alternative 1: (No Action)**:

Maintain water in only those water sources that have been traditionally maintained; allow other water sources to dry out or re-fill with rainwater naturally. Do not redevelop Yaqui or McPherson Tanks.

2) **Alternative 2: (Proposed Action):**

Working with the AGFD and other partners, including the Yuma Valley Rod and Gun Club, redevelop Yaqui and McPherson Tanks by installing a series of 24" diameter polyvinyl chlorine (PVC) pipes and a 24" deep trough in the vicinity of the existing Yaqui and McPherson Tanks. The 24" diameter PVC pipes would be placed in three or four rows and the pipes would be placed end-to-end and would be either 160' (Yaqui) or 120' (McPherson) long. The array of 24" pipes would hold approximately 13,000 gallons of water, much of it unavailable for evaporation. Six-inch diameter PVC pipes would lead from the 24" pipes to small, water diversion structures, or weirs, placed in small, nearby washes. The six-inch PVC would each be 80-100' in length. The weirs would only be about 12' high and would be constructed of a framework of concrete building blocks covered with mortar and then a layer of gravel and sand so that they blend into the surrounding landscape. Two water diversion structures and pipelines would be installed at McPherson Tank and three at Yaqui Tank. The entire projects would be buried with only the troughs and a two-inch diameter PVC vent pipe for each of the 24" pipes visible above ground.

Materials would be carried to each project site by vehicle, and the installation would begin by digging a hole large enough to accommodate the 24" pipes and trough using one or two backhoes. Once construction is complete, the areas would be backfilled to original contour and grade, and the area restored by raking and sweeping the ground with a broom to remove all vehicle and heavy equipment tracks. A few plants (a few teddy bear cholla [*Opuntia bigelovii*], buckhorn cholla [*O. acanthocarpa*], a small (four-foot-tall) foothill paloverde tree [*Cercidium microphyllum*] at McPherson Tank Redevelopment, an ocotillo at Yaqui Tank Redevelopment [*Fouqueria splendens*], a few little-leaf krameria [*Krameria parvifolia*] and white bursage [*Ambrosia dumosa*]), are expected to be uprooted at the project sites. Disturbance to plants, however, will be minimized wherever possible and those plants that can be potentially re-planted (primarily ocotillo and cacti) will be set aside and transplanted back into the

project sites once the project is completed. The completion of the work at each project site is expected to take between three and five days and is scheduled to take place in late May and June 2007.

Approximately 82% of the Kofa NWR is within the Kofa Refuge Wilderness. The Yaqui Tank Redevelopment Project is planned to take place immediately adjacent to the designated road that follows Moonshine Wash and as a result, is nearly all within the 200-foot-wide area that is outside of designated Wilderness. The only portion of the proposed Yaqui Tank Project that is within Wilderness would be two or three of the water diversion weirs. The McPherson Tank Redevelopment Project would be within designated Wilderness, adjacent to McPherson Wash within 0.1 mile of the designated McPherson Pass Road.

The construction of the Yaqui and McPherson Tanks Redevelopment Projects would temporarily impact wilderness values and character with the presence of heavy equipment, vehicles, people, and materials. These impacts are expected to be restricted to a period of three to five days. Only the small vent pipes for each of the 24" PVC pipes and the drinking troughs would ultimately be visible above ground. With careful examination of the area, a visitor would eventually locate the small water diversion weirs, but these would be substantially unnoticeable, naturalized with sand and gravel, and would only be a few inches high.

Overall, the impact of maintenance activities in the Kofa Wilderness would decrease since very little water hauling after construction is expected to take place. In addition, the Service would discontinue maintenance of the existing Yaqui and McPherson Tank projects.

3) **Alternative 3: (Non-Mechanized Action):**

The proposed action is the same as in Alternative 2, except that all materials would be carried from the nearest designated road by foot and all digging and re-filling to grade would be completed by hand, using shovels. Rather than taking three to five days to complete, using hand tools only would extend the project implementation time to approximately 2-3 weeks per project.

For Each Alternative:

List Biophysical Effects (Environmental resource issues affected, biological and physical effects, consideration for the wilderness resource as a whole):

1) Alternative 1: **No Action**:

Making no improvement to the availability and distribution of water for desert bighorn sheep would mean existing, inefficient water sources requiring relatively high maintenance would remain and. Wilderness intrusions would continue when water is hauled during dry periods. Without improvements to the current distribution of permanent water, the desert bighorn sheep population could be expected to continue to decline, especially if the ongoing drought conditions continue.

2) **Alternative 2: (Proposed Action):**

An improvement in the reliability and distribution of water sources for wildlife, and especially desert bighorn sheep, would assist the animals in population recovery by providing water year-around, and especially during the hot summer months. The availability of water assists lactating ewes in milk production and this, in turn, improves lamb survival, which is critical to population recovery. By using heavy equipment the projects would be completed relatively quickly, providing reliable water during the summer of 2007 while minimizing disturbance to wildlife during construction.

The construction of the two projects would result in disturbance to soils and the removal of several plants. Some of the plants would be replanted. These impacts would be limited to the project sites and would be restored at the conclusion of each project.

3) **Alternative 3: (Non-Mechanized Action):**

The biophysical effects would be the same as in Alternative 2 except that instead of taking only three to five days to complete, the projects would each take much longer, approximately two to three weeks, which would lengthen the disturbance of wildlife in the area.

List Social/Recreation/Experiential Effects (How the wilderness experience may be affected, effects to wilderness character, cumulative effects to wilderness character, scientific and historic use, effect action may have on the public and their wilderness experience):

1) Alternative 1 – **No Action**.

If the decline in desert bighorn sheep numbers is not addressed and the decline continues, the loss of wildlife would have a direct and negative effect on the social and recreational experience of the visitor. The presence of desert bighorn sheep and other wildlife on the refuge enhances the visitors' experience and adds to the Wilderness character. Doing nothing also does not take advantage of the opportunity to study the decline of desert bighorn sheep and their interactions with their environment.

The U.S. Fish and Wildlife Service would fail to maintain and enhance the wildlife populations under its care and may be seen as failing to meet its responsibilities for wildlife and habitat management. Taking no action would also mean that the U.S. Fish and Wildlife Service is not meeting its legal or policy requirements.

A visitor the Kofa Wilderness would not encounter the mechanized equipment or materials which would be temporarily in the area in Alternative 2, or the materials that would be in the area for several weeks in Alternative 3.

2) **Alternative 2: (Proposed Action):**

The visual and noise impacts associated with redeveloping Yaqui and McPherson Tanks would have short-term, negative impacts on wilderness character. However, these impacts would be temporary, lasting only for a few days at each redevelopment site. In time, the areas would recover and appear essentially the same as the surrounding areas. In addition, the work is scheduled during May and June, when the Kofa NWR has few visitors.

3) **Alternative 3: (Non-Mechanized Action):**

The impacts are the same as in Alternative 2 except that there would be reduced noise and dust associated with the effort since heavy equipment would not be used for digging. The additional time needed to complete the projects by hand would mean that there are workers on-site for a much longer period of time. A smaller area would need to be raked, swept with a broom, or otherwise restored since all vehicles would remain on or immediately alongside the designated roads.

List Societal/Political Effects (Political considerations, i.e. MOUs etc):

1) Alternative 1: **No Action**:

If the public learns that the U.S. Fish and Wildlife Service has decided to forgo opportunities to enhance the reliability and distribution of permanent water sources they are likely to perceive the refuge as failing to meets its responsibilities for wildlife and habitat management and failing to meet its legal and policy requirements. In addition, the Service and AGFD would be seen as failing to work cooperatively to address wildlife issues on the Kofa NWR.

2) **Alternative 2: (Proposed Action):**

There would be no anticipated societal effects if this alternative were selected. There may be some opposition to this alternative by Wilderness advocates who may object to the use of mechanical devices for any reason, even to maintain wildlife populations that enhance wilderness characteristics. However, no opposition was raised in 2003 or 2004 when mechanized means were used to replenish water in natural water sources in Wilderness that were about

to go dry, or when existing wildlife water catchments were redeveloped, such as Charlie Died Tank in 1998 and Scotty Dog Wildlife Water Catchment in 2001. In addition, there was no public opposition concerning wildlife management when the *Kofa National Wildlife Refuge and Wilderness and New Water Mountains Wilderness Interagency Management Plan and Environmental Assessment* was prepared in the late 1990s.

The Service is in the process of contacting stakeholders, such as the Sierra Club, Yuma Audubon Society, and the Arizona Wilderness Coalition as part of a larger outreach strategy for the *Investigative Report and Recommendations for the Kofa Bighorn Sheep Herd.*

3) **Alternative 3: (Non-Mechanized Action):**

Wildlife managers and volunteers would wonder why there was a decision to dig the large holes (9' x 120' x 3' deep at McPherson Tank; 7' x 160' x 3' deep at Yaqui Tank plus 9' x 5' x 3' deep holes for each of the troughs, plus trenches for the 6" diameter water lines) by hand, extending the time that the projects take to complete, when the Service permitted backhoes to in the redevelopment of Scotty Dog Wildlife Water Catchment in 2001 and Charlie Died Tank in 1998. Similarly, the Service allowed heavy equipment in the redevelopment of Basserisc, Tuseral, Half-Way, North Pinta, and Heart Tanks on Cabeza Prieta NWR, within the Cabeza Prieta Refuge Wilderness in 2005, 2006, and 2007.

List Health and Safety Concerns (Consider types of tools used, training, certifications, and other needs to ensure a safe work environment; consider public effects):

1) Alternative 1: **No Action**:

No immediate human health or safety concerns would result if the reliability and distribution of permanent water sources was not changed on the Kofa NWR.

2) **Alternative 2: (Proposed Action):**

All personnel would need to exercise caution when working in hot conditions which normally is the case when redeveloping water sources during the summer months. Heat and water consumption should be reviewed, as well as other safety hazards onsite, to reduce the need for an emergency rescue. All of the individuals working on the project should be aware of each others' condition in order to identify any signs of heat-related illness. Completing each proposed project in three to five days and using heavy equipment for the difficult earth-moving work would minimize the chance of illness and repetitive-motion injuries to the workers.

Reducing the need to augment water at remote sites by installing buried, reliable systems also increases safety by reducing the number of trips to supplement water.

3) **Alternative 3: (Non-Mechanized Action):**

The human health and safety concerns would be increased in this alternative since in addition to the heat-related problems described in Alternative 2, carrying the materials to the sites (for example, 0.1 miles at McPherson Tank carrying 20' long 24" diameter PVC pipes that each weigh in excess of 400 pounds) would expose the workers to back, leg, and ankle injuries. Digging and refilling the large holes required at each proposed project would likely cause repetitive motion injuries, back injuries, and blisters. The length of the time needed to complete the projects (two to three weeks) would likely result in poor worker retention and recruitment, placing additional work on those individuals willing to stay and complete the projects.

List Economic and Timing Considerations (Costs and timing of each alternative, urgency and potential cumulative effects):

1) Alternative 1: **No Action**:

This is the least expensive alternative in the short-run, but the failure to address habitat conditions that could be altered to stabilize and increase the number of desert bighorn sheep in the Kofa NWR at this time could result in

more expensive efforts in the future, such as, but not limited to, transplanting desert bighorn sheep to Kofa NWR from other areas.

2) **Alternative 2: (Proposed Action):**

The funding for Yaqui and McPherson Tanks Redevelopment Projects has largely been offered by Kofa NWR cooperators, especially AGFD, who has offered to purchase all of the materials and use an AGFD contractor to transport materials to the sites. Additional volunteer help has been offered by the Yuma Valley Rod and Gun Club and other volunteers.

3) **Alternative 3: (Non-Mechanized Action):**

The cost of Alternative 3 would be the most expensive of the two action alternatives since the implementation would take much longer. The cost of materials and transportation of the materials would be the same as in Alternative 2.

Proposed Action:

Alternative Selected (Circle one): 1 2 3

Summarize the Project to be Completed (Who will do the work, what/where/when action will take place, how performed):

We propose to redevelop Yaqui and McPherson Tanks in late May and June 2007. Each redevelopment would consist of a buried rainwater system that holds approximately 13,000 gallons of water, largely unavailable to evaporation. The primary area where water would be stored would be in a series of 24" diameter PVC pipes. All of the materials for each project would be purchased by AGFD and transported to the project sites by trucks and trailers AGFD contractors or by employees traveling to the project sites on designated roads. Two backhoes would be brought as close to the projects as possible on graded roads (Palomas Cabin for Yaqui Tank and Refuge Marker 75 for McPherson Tank) and then unloaded from their semi/lowboy trailer transports and then driven in to the project sites. Workers (agency employees and volunteers) would camp out near each project and stay during the three to five days needed to complete the work. Only those vehicles and equipment essential to the completion of McPherson Tank would travel the 0.1 miles in McPherson Wash to reach the proposed project site. All leftover materials would be removed from the project sites and the areas returned to approximate original contour. Any plants that have been uprooted during the construction effort would be replanted if that is possible; transplanting is usually successful for ocotillos and cacti. The project sites and any access routes would be raked and swept with a broom to naturalize the area and remove all vehicle and heavy equipment tracks. The backhoes would be driven on designated roads back to the graded gravel roads where they would be re-loaded on transports.

Other Considerations to Minimize Impacts to Wilderness (Specific operating requirements, maintenance requirements, standards and designs, mitigation measures needed, monitoring and feedback needed to assist in planning future actions):

All equipment and materials used in the redevelopment of Yaqui and McPherson Tanks would be removed at the conclusion of each installation project. Workers would be encouraged to employ Leave No Trace techniques throughout the described efforts. Vehicles not needed for a particular project will remain within 100 feet of designated roads. The timing of the effort (May and June) occurs when public visitation to the Kofa Wilderness is very low.

Kofa National Wildlife Refuge

Minimum Requirement Analysis and NEPA Worksheet

Yaqui and McPherson Tanks Redevelopment Projects

U.S. Fish and Wildlife Service
Region 2
Kofa National Wildlife Refuge
Yuma County

Prepared by: _____
_____

Susanna Henry — Date
Assistant Refuge Manager
Kofa National Wildlife Refuge

Approved: _____
_____

J. Paul Cornes — Date
Refuge Manager
Kofa National Wildlife Refuge

NEPA Worksheet:

1)	Is the action of limited scope and duration and qualifies as a categorical exclusion? Circle *Yes* or *No:*	**NO** Go to Question 2	**YES** Proceed with action: Document Wilderness Trips and Maintain Project Files
2)	Is the action likely to have significant adverse effects on the human environment? Circle *Yes* or *No:*	**NO** Scope Interested Public; Prepare an EA; Prepare Decision Memo	**YES** Proceed with EIS

Project Leader:

_____

Signature **Date**

Kofa National Wildlife Refuge

Minimum Requirement Analysis and NEPA Worksheet

(Insert Project Title)

U.S. Fish and Wildlife Service
Region 2
Kofa National Wildlife Refuge
New Water Mountains
La Paz County

Prepared by: _____
_____

Susanna Henry — Date
Assistant Refuge Manager
Kofa National Wildlife Refuge

Approved: _____
_____

J. Paul Cornes — Date
Refuge Manager
Kofa National Wildlife Refuge

Memorandum

To: The Kofa National Wildlife Refuge Yaqui and McPherson Redevelopment Project Files

From: Assistant Refuge Manager

Through: Regional Archeologist

Subject: Cultural Resources Clearance for the Yaqui and McPherson Redevelopment Projects

Yaqui Tank. On Monday, April 16, 2007, I visited the proposed project site for the Yaqui Tank Redevelopment Project with John Hervert, Arizona Game and Fish Department Wildlife Program Manager. The project site is located on Kofa National Wildlife Refuge (NWR) in the eastern portion of the Kofa Mountains in T. 1S., R. 16W., Sec. 29, Gila and Salt River Meridian, Arizona [Lat/Long coordinates: 33° 18.649'N, 113° 55.556'W (NAD 83/WGS84)], 2383 feet in elevation. The proposed redevelopment is located along the designated Moonshine Wash Road and is largely outside of the Kofa NWR Wilderness. The redevelopment site is approximately ¼ mile from the existing Yaqui Tank. We carefully searched the project area (approximately ½ acre in size) looking for cultural resources including, but not limited to, stone tools, lithic pieces remaining from the manufacture of stone tools, pottery chards, sleeping circles and other rock alignments, ancient trails, bedrock mortars and grinding stones, petroglyphs and pictographs, historic glass bottles, glass fragments, old steel cans or other tools. We did not find any cultural resources at the proposed project site, but we did note that the entire area has been used as a campsite in recent times and includes a fire ring with recent burned wood pieces.

McPherson Tank. On Wednesday, May 9, 2007, I visited the proposed project site for the McPherson Tank Redevelopment Project with John Hervert and with Lindsay Smythe, Kofa NWR Refuge Biologist. The proposed reconstruction of McPherson Tank is located on Kofa NWR in the Castle Dome Mountains between the existing McPherson Tank and McPherson Pass in T. 3S., R. 18W., Sec. 30, G&SRM, [Lat/Long coordinates: 33° 07.780'N, 114° 09.688'W] 1911 feet in elevation. We carefully searched the project area (approximately ½ acre in size) and the 0.1 mile long access route in McPherson Wash leading from the nearest point on the designated road, looking for any cultural resources including the same types listed for the Yaqui Tank Redevelopment Project. We did not find any cultural resources at the proposed project site. The nearest evidence of human use of this area is the U.S. Fish and Wildlife Service aluminum and plastic rain gauges which are located just south of McPherson Wash approximately 400 feet from the designated McPherson Pass Road.

Experience of the Searchers: John Hervert has been working in the Yuma Region for AGFD since 1984, and I have been working in the Yuma area for the Department of the Interior since 1985. I was trained as a "Para-Archeologist" by Bureau of Land

Management Yuma Field Office Archeologist Boma Johnson in February 1998 so that I could assist Mr. Johnson with cultural resources clearances. I assisted with many cultural resource surveys along the Lower Colorado River and in the surrounding desert and assisted in the effort to record cultural sites between 1998 and 2001, when I joined the Kofa NWR staff. Lindsay Smythe has been working on the Kofa NWR since 2005.